REVIEWS.

THE INSANITY OF OVER-EXERTION OF THE BRAIN; BEING THE MORISON LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, SESSION OF 1894. By J. BATTY TUKE, M.D., F.R.C.P. E., F.R.C.S. E. With Illustrations and Diagrams. Edinburgh: Oliver & Boyd.

THE little volume before us, we venture to say, is one of the most valuable and suggestive that can in these days of rapid progress be brought to the attention of the neurologist. It embraces the five Morison lectures delivered by Dr. Tuke before the Royal College of Physicians of Edinburgh in 1894.

The first lecture is a clear and concise statement of the structure of a cerebral convolution, in which the important advances contributed by Golgi, Ramon y Cajal, Obersteiner, Retzius, Bevan Lewis, and others receive their full share of attention. All of the essential points are beautifully illustrated by a large colored plate. Space forbids our entering into the details of this admirable description, as they can only be understood by reference to this plate. It will suffice, perhaps, to recall that in addition to the various layers of cells found in the cortex, four in number, and to the projection, commissural, and association systems, there are other and much thicker fibres, "proceeding possibly from the medulla or cerebellum, which, passing usually in an oblique or horizontal direction through the thickness of the gray matter, form ramifications of enormous extent throughout its whole substance, the superficial zone included. The terminal branches form varicose arborizations which appear to inclose preferentially the small pyramids." Further, the relations of the nerve-cells to the capillaries and lymph-spaces are not only of physiological but of profound pathological importance, as we will presently see. The body of each cell "is encapsulated by a projection of the hyaline sheath of its nutrient capillary, the perivascular space so formed being the commencement of the lymph-path which leads from the cell to the main lymphatics of the head and neck. The brain has no true lymphatics, and is dependent on the perivascular system for the removal of effete and superfluous material. All of the blood-supply of the convolutions is derived from the pial arteries, "which on the summits are given off directly, and in the sulci form large descending branches. Each vessel carries with it a prolongation of the pia which surrounds the vessel to its ultimate branches. This is often spoken of as the adventitia of the vessel. From this pial or hyaline sheath processes are given off which encapsulate the cells, each of which is thus surrounded by a perivascular capsule."

With such facts as these before him, the author begins the second lecture with a consideration of the various causes of implication of the apparatus. Among these, over-exertion of the brain is evidently one most interesting and important. Physiological hyperæmia, the result of brain activity, the rise of temperature that accompanies this process and other associated phenomena are dwelt upon. The author, further, dwells *in extenso* upon the significance of Hodge's discoveries in regard to the loss of substance in cells and the difference in reaction to stains after prolonged activity, *i. e.*, the changes which are noted in nerve-cells after fatigue; and he also alludes to the interesting discovery of Mosso, who clearly demonstrated that fatigue caused by psychical action produces not only a poisonous effect on the general system, especially the muscular, of the person experimented on, but he has also shown that the injection of blood taken from an exhausted animal into the circulation of animals at rest produces in them the extreme indications of fatigue. He is of opinion that the symptoms of poisoning are produced more from the breaking-down of nerve-cells than from any impairment of nutrition.

In the third lecture Dr. Tuke dwells upon the accentuation of general pathological changes in the Rolandic area. Thus, he says, it may be considered as a fact that the condition of the pia as viewed by the naked eye affords a fair index of the degree of *active* morbid action going on in the subjacent convolutions, and at the same time he directs attention to the apparent difficulty in that the very regions, namely, the frontal lobes, the aberration of whose functions is a prominent symptom of the insanity of over-exertion, present in most cases slight visible departures from normality of the membrane. For this curious fact he suggests the following ingenious explanation: In the frontal region the cell-degeneration is of a granular character, which may more or less rapidly go on to destruction and absorption. This, to his mind, "is indicative of impaired nourishment rather than of active morbid action—of interruption of trophesial function—which depends on the maintenance of the integrity of cell-connection. To this destruction of cell-material and of the implication of nerve-fibre, presently to be spoken of, must be ascribed the general shrinkage of the anterior lobes so often noted in the insane." "In the course of almost every case of idiopathic insanity —*i. e.*, insanity due to over-exertion of the brain—we have a fairly well-marked prodromal period indicating the diseased balance between nutrition in the kinæsthetic area. As the impaired function of the cells of this area makes itself felt on the cells of ideational centres, whether by lessened or increased conduction of energy, or by modification of their nutritive influences, we have reduction of their structural integrity and perversion of psychical acts. As every case runs its course to recovery or to permanent insanity, we have a period of mental and physical torpor, which we speak of as dementia. On the rapid removal or non-removal of the causes of implication of the cells of the Rolandic area depends the issue of the case—recovery or prefrontal atrophy."

The milkiness or infiltration of the pia he regards justly as dependent on the damming back of the lymphatic stream. This condition first appears "as a fine milky line along the course of the pial veins, and is due to the deposit of waste and plastic exudates. As these accumulate and diffuse, the membrane becomes thick, tough, and on section is found to consist of a mass of material which looks like an immense increase of the normal trabeculæ. Through this thickened structure the flow is slow, and the waste material which would have been disposed of were the channels patent is deposited in a certain circumscribed area. It is probable that the fluid is filtered in the thickened pia, and that as it reaches the larger cisterns it is so slightly loaded as to pass freely into the wide space in the spinal canal." The predominance of these appearances in the area of distribution of the middle cerebral artery suggests the query, "Is it that the demand for blood by the active part of the organ leaves after it the signs of work and the evidence of waste of tissue?"

In a further consideration of the trophic interrelation of different portions of the brain, especially the relations between the frontal and Rolandic regions, he is led to express the conviction that "in the brain interruption of connection is brought about by Wallerian degeneration of fibres, processes, and collaterals, the result of structural implication of cells produced by over-stimulation and mantained and aggravated by the effects of poisonous exudates."

In the fourth lecture the author takes up the consideration of the symptomatology and etiology of over-exertion of the brain, and in the fifth and last dwells at some length upon the treatment. The latter consists essentially of prolonged rest, with the use of few or no drugs. Especially does he insist upon securing sleep by simple means, such as counter-irritation to the back of the neck, warmth to the feet and back or over the abdomen, or by gentle shampooing or massage applied to the head or neck. The kidneys also should be stimulated. "As a rule, the patient begins to sleep by snatches, and, as the case goes on, in more continuous periods. No doubt steady sleep for five or six hours, or even longer, is what we hope for; but if a patient, who for days or weeks previously has hardly slept at all, and then only probably by the use of alcohol or opiates, gets five or six hours in the twenty-four by an hour or two hours at a time, he does fairly well."

When medicines are required Dr. Tuke makes free use of antipyrine, giving as much as fifteen grains every two hours, and he tells us that "it very generally soothes and produces sleep, and the general condition improves;" and to this he adds the statement that he has "frequently given antipyrine to the amount of 60 to 100 grains per diem for a fortnight at a time," and that he has "never noticed any of the ill-effects ascribed to it, except occasionally nausea and vomiting. It may be that patients in the condition we are speaking of may be more tolerant of the poison than those in whom temperature runs high. As in all nervous cases, the dosage is at first a matter of experiment; but it is quite safe to begin with the dose above indicated, raising it somewhat, and administering it more frequently, according as the patient's condition improves."

If forced to use other remedies, he prefers paraldehyde, administered in two to three drachm doses per rectum.

In closing he regrets the fact that general hospitals are closed to cases presenting mental symptoms unless these are produced by alcohol. He says: "I have no hesitation in saying that were wards set aside in each of our general hospitals for the treatment of early cases of insanity by the ordinary physicians a vast amount of misery would be relieved, and, what appeals to a large section of the public, the yearly increasing expenditures on asylums would in no slight measure be obviated."

In the prefatory notes to these lectures he tells us that since their original publication in the *Edinburgh Medical Journal* important investigations have been made bearing on certain opinions and theories advanced in them, and that though he does not deem it advisable to anticipate the fuller publications of these investigations he feels justified in saying that they throw much light upon the nature of cell-changes, upon the rapidity of subsequent deterioration of the connective apparatus, and on the absolute necessity of rest for recuperation, and that they will thus aid us to arrive at a rational treatment of the insanities.

It is to be regretted that among the various names of men to whom he gives credit that of Weir Mitchell does not occur, especially as the treatment proposed by Dr. Tuke for the incipient insanities of over-exertion is essentially the rest-cure method as introduced by this distinguished American. F. X. D.

ASEPTIC SURGICAL TECHNIQUE, WITH ESPECIAL REFERENCE TO GYNECOLOGICAL OPERATIONS, TOGETHER WITH NOTES ON THE TECHNIQUE EMPLOYED IN CERTAIN SUPPLEMENTARY PROCEDURES. By HUNTER ROBB, M.D., Associate in Gynecology, Johns Hopkins University; Professor of Gynecology, Western Reserve University, Cleveland, Ohio. Illustrated. Pp. xvi., 264. Philadelphia: J. B. Lippincott Company, 1894.

FROM our knowledge of the excellent experimental and practical work which the author has been doing for several years in connection with the perfecting of surgical technique, we are prepared at the outset to accept without hesitation the concluding statement in Dr. Kelly's introduction, that he is "eminently qualified to speak and command our interested attention in relation to the subjects treated in the book before us."

The introductory chapter will be especially valuable to the general reader, who will learn from it the practical value of laboratory investigations. Many successful operators who pride themselves on being purely "practical" will not admit the debt which they owe to the patient toilers at the microscope, who have done so much to remove the element of empiricism from modern surgery. The author rightly insists upon "the necessity of the harmonious working together of the surgeon and clinician with the bacteriologist, believing that each and all will in this way gain new facts and new points of view."

The chapter on sterilization and chemical disinfection is concise but thorough. We note with satisfaction a lucid exposition of the point so commonly overlooked by the profession, that the indiscriminate use of strong antiseptic solutions during an operation is *not* asepsis.

Chapter III., on the practical application of the principles of sterilization to operating-suits and the preparation of the surgeon and his assistants, may seem unnecessarily refined to one who is not accustomed to the exact methods of modern hospitals; but we can assure the critic that the precautions described *pay*. It may not be possible or desirable for many to adopt exactly the technique recommended, but the principles involved must be mastered by every surgeon who essays to rise above mediocrity. "Any good work," we read, "necessarily involves a great deal of drudgery, and in the technique of the newer surgery the lazy man has no place."